

Serial No. 10/766,856
Amdt. dated May 8, 2006
Reply to Office action of February 8, 2006

- 3 -

Amendments to the Claims:

The following listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1-21. (Canceled)

22. (New) A valve for fluids operating under differential pressure, which receives a main inlet flow and releases a main outlet flow, comprising:

- a main valve (1,4,5,7,9) having a main inlet (112,412,512,712,912) and a main outlet (113,413,513,713,913) for fluid; said main inlet being equipped with a main valve seat (114,414,514,714,914) over which a main plug (100,400,500,700,900) is seated, with said main plug being displaceable in an axial direction, perpendicular to a sealing plane;
- a control inlet (111,411,511,711,911), communicating with a pressure chamber (110,410,510,710,910), which carries the flow from upstream said main flow to said pressure chamber;
- a control outlet (121,421,521,721,921), communicating with said pressure chamber, for allowing total or partial release of the flow control from said pressure chamber,

Serial No. 10/766,856

Amdt. dated May 8, 2006

Reply to Office action of February 8, 2006

- 4 -

- with said control flow being discharged at a point located downstream said main outlet flow;
- a secondary control valve, to regulate the control fluid in said pressure chamber, said secondary control valve being formed by an axially driven stem (103,403,503,703,903) made up of a hollow portion and an end portion, where said stem drives the relative displacement between said main plug and said main seat, with one of the ends of said end portion being located beyond a body of said valve in order to allow said end portion to be driven from the outside;
 - said hollow portion is provided with two openings in their corresponding axial end, with said hollow portion being joint in one end to said main plug, with one of said two openings being located in the joint end to said main plug, being surrounded by said pressure chamber, and with another of said two openings being located outside said pressure chamber, from which said hollow portion goes out through an opening of said pressure chamber, being provided with a tight seal which allows axial displacement of said hollow portion;
 - said end portion is independent from and is axially aligned with said hollow portion, with one of the ends of said end portion being provided with a secondary plug

Serial No. 10/766,856
Amdt. dated May 8, 2006
Reply to Office action of February 8, 2006

- 5 -

- portion to obstruct said another of said two openings which is located outside said pressure chamber;
- an area, corresponding to said control inlet, being smaller than an area corresponding to said control outlet, so that the volume of flow through said control inlet is lower than the volume of flow through said control outlet, so that the control fluid may enter through said control inlet.
23. (New) A valve for fluids as in claim 22, wherein said control inlet includes a duct (111,411,511,711,911) which communicates with said main inlet.
24. (New) A valve for fluids as in claim 23, where said duct is made up of a small opening in said main plug which communicates with said pressure chamber.
25. (New) A valve for fluids as in claim 22, where said end portion of said stem is joint to said hollow portion of said stem through a joint restricting means (724) to an upper portion of said hollow portion of said stem, so that sliding of said joint restricting means keeps said end portion of said stem within a preset range of axial displacement.
26. (New) A valve for fluids operating under differential pressure, wherein said valve (3) comprises:

- 6 -

a main inlet for fluid (312) and a main outlet for fluid (313); with said main outlet for fluid being equipped with a main valve seat (314) over which a main plug (300) is seated, with said main plug being displaceable in an axial direction, perpendicular to a sealing plane;

said valve having a control inlet for fluids (311), from upstream, allowing control fluid passing to a pressure chamber (310) and having a control outlet for fluid (321) downstream, thus allowing the control fluid leaving said pressure chamber totally or partially; with the control fluid in said pressure chamber being regulated by a secondary control valve formed by an axially driven stem made up of at least a hollow portion and an end portion, where said stem drives the relative displacement between said main plug and said main seat of the valve; with one of the ends of said end portion of said stem being located beyond a body of said main valve in order to allow its driving from the outside, wherein:

- said control outlet for fluid (321) is an opening located in said main plug;
- said end portion of said stem is independent and is axially aligned with said opening for said control outlet of fluid located in said main plug; with one of the ends of said end portion of said stem being provided with a secondary plug for obstructing said opening of said

Serial No. 10/766,856
Amdt. dated May 8, 2006
Reply to Office action of February 8, 2006

- 7 -

control outlet and the other end of said end portion of said stem being located outside said pressure chamber, from which it goes out through an opening in said pressure chamber provided with a tight seal which allows the axial displacement of said end portion of said stem; and

- an area corresponding to the inlet of control fluid is smaller than an area corresponding to the outlet of the control fluid, so that the volume of flow of inlet of control fluid is lower than the volume of flow of discharge of the control fluid.

27. (New) A valve for fluids operating under differential pressure, wherein said valve (9') comprises:
a main inlet for fluid (912') and a main outlet for fluid (913'); with said main inlet for fluid being equipped with a main valve seat (914') over which a main plug (900') is seated, with said main plug being displaceable in an axial direction, perpendicular to a sealing plane;
said valve for fluids also having a control inlet for fluids from upstream, which is a small duct or opening (911') in said main plug allowing said control fluid passing to a pressure chamber (910') and having a control outlet (921') for fluid downstream, thus allowing control fluid leaving said pressure chamber totally or partially; with the control fluid in said

Serial No. 10/766,856

Amdt. dated May 8, 2006

Reply to Office action of February 8, 2006

- 8 -

pressure chamber being regulated by a secondary control valve formed by an axially driven stem made up of a hollow portion and an end portion, which is jointly and axially placed as regards said hollow portion; with one of the ends of said end portion of the stem being located beyond the body of said main valve in order to allow its driving from the outside, wherein:

- said hollow portion of said stem is provided with two openings in their corresponding axial end, with one of the openings of said hollow portion of said stem, which is located in the joint end to said main plug, being surrounded by said pressure chamber; and with the other of said openings at the other end of said hollow portion of said stem joint to said end portion of said stem being located outside said pressure chamber, from which it goes out through an opening of said pressure chamber, being provided with a tight seal which allows the axial displacement of said hollow portion of said stem;
- said main plug has a secondary plug (905') joint to and at a fixed preset distance from a main wall of said main plug on its side facing said pressure chamber, so that said secondary plug will obstruct said opening of said hollow portion of said stem located in a farthest end of said joint to said end portion when placed in axial contact; and

Serial No. 10/766,856

Amdt. dated May 8, 2006

Reply to Office action of February 8, 2006

- 9 -

- an area corresponding to said inlet of control fluid is smaller than an area corresponding to said outlet of the control fluid, so that the volume of flow of inlet of control fluid is lower than the volume of flow of discharge of the control fluid.